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INFLUENCE OF HUMAN SERVICES ON PARAMETERS' OPTIMIZATION OF POPULATION REPRODUCTION REGIME

The condition of human services in Donetsk region is analyzed at standpoint of economic, social and demographic functions execution. The article denotes that deformation in human services structure and small volume consumption of some kind of services keeps back the society development, makes worse demographic situation both in state and regions, and aggravates the problem of labour potential forming.

The process of formation of market economy in Ukraine has changed greatly the structure of consumer market as a whole and the services industry structure in particular. Donetsk region based human services enterprises can serve as an example to prove the statement. One of the largest Ukrainian regions, Donetsk region occupies the central place in social and economical development of the country. Approximately 10 % of country population lives there. The region consists of 27 cities and 17 areas. Donetsk city is a regional center with more than 1 million inhabitants.

Considerable manufacturing potential of the region determines its high urbanization level. The region owns more than one fifth of Ukrainian main production-manufacturing funds and supplies 20 % of manufacturing produce of Ukraine.

At the present moment Donetsk region experiences the process of modern human service enterprises network formation. Thus, for example, the total amount of the services provided showed a 16.8 % increase in terms of factual prices from 2002 to 2003. Such a positive dynamics is a result of an overall improvement in Ukrainian economy, reformation of forms of ownership, implementation of market mechanisms. Besides this, such factors as price policy changes and faults — an increase of transportation, communication, public services tariffs etc — also determine the growth of amount of the services provided, that has resulted in a deviation of factual services consumption structure.

The structure of services consumption is characterized by two considerable disproportions. Transportation (55.4 %), postal and communication services (12.8 %), real estate operations (7.3 %) and educa-

tion (5.1 %) lead in the race. The rest of the services occupy the marginal place.

The analysis of the structure of services consumption is carried out with the help of Gotev and Salai coefficients in the contexts of: form of ownership, territory (cities and areas of Donetsk region), and business activity type. According to the results of the analysis, the structure of services realization experienced the smallest changes in the form of ownership (0.036 and 0.068). But the coefficients are a bit higher in cities and areas (0.38 and 0.104 relatively). Consequently, the changes in demand for services are a result of the widening of the range of services provided, launch of completely new services, which are provided alongside with traditional ones.

It should be pointed out, that after the commercialization and privatization of services industry enterprises some of them abandoned the provision of some types of services to the consumers. Thus, for example, social services in 2003 accounted for only UA Hr 266.3 thousands or 0.007 % of the total services provided. Services enterprises give their preference to provision of lucrative services that do not demand much investment.

Table 1

DONETSK REGION CITIES GROUPING IN TERMS OF QUANTITY OF POPULATION IN 2003

Groups of cities according to the quantity of population, thousands people	Number of cities	Amount of the provided services per an inhabitant, Hr	Names of cities
Up to 50	8	72.04	Avdeevka, Dokuchaevsk, Zhdanovka, Kirovskoye, Krasnyi Liman, Novogrodovka, Ugledar and Yasinovataya
50—100	11	83.58	Debaltsevo, Dzerdzhinsk, Dimitrov, Dobropolye, Druzhkovka, Konstantinovka, Krasnoarmeisk, Selidovo, Snezhnoye, Torez, Shakhtyorsk
100—500	7	141.87	Artyomovsk, Gorlovka, Yenakievo, Kramatorsk, Makeevka, Slavyansk, Khartsyzsk
500—1000	1	195.55	Mariupol

More than 1000	1	805.06	Donetsk
Total:	28	124.17	

Not occasionally, the stake of such types of services as architecture and construction services grew considerably in 2003, showed a 14.4 % growth and accounted for UA Hr 143.9 m. Real estate operations showed in 2003 a 44 % increase and reached a point of UA Hr 278.1 m. Private and state realty of production-technical purpose renting services rose 3.5 times, intermediary services in real estate buying-selling operations showed a rise from 57 % to 80 % and made up UA Hr 7.3m; the services of travel agencies and bureaus showed a 43 % rise and amounted to UA Hr 17.1m.

The above mentioned data and figures of the development of services industry enterprises give an average characteristic of services industry performance in regional aspect, but don't take inward regional peculiarities into account. At the same time, services enterprises activity varies greatly in different regions, that is why it should be analysed in the context of homogeneous groups, the grouping was made according to the quantity of city population.

Consequently, small-, middle— sized and large cities with population up to 500 thousands are the most typical of Donetsk region. The amount of the provided services per an inhabitant in Hr is used in the scientific work under analysis to characterise the degree of services industry development in Donetsk region. It reflects the services industry potential, level of income of the inhabitants, degree of market relations' development. The average index for Donetsk region accounted for 124.17 % in 2003. Still, small cities showed a much lower figure (an average of UA Hr 72.04 % per an inhabitant); the index for middle-sized cities was a bit higher (Hr 83.58); for large cities the figures were much higher (UA Hr 141.87): UA Hr 195.55 — for Mariupol, UA Hr 805.06 — for Donetsk.

Changes in the range of provided services influence all the aspects of society life: first of all — demographic ones. Thus, birth rate is closely connected with the level of education, health service and medical care, leisure and entertainment services, culture and sports development. Death rate depends on the state of health service and medical care; degree of social services development; municipal services, conditions of living, convenience of one's permanent residence; level of resort services development. Without any doubt, population differentiation in terms of services consumption calls forth the reproduction indexes differentiation (Table 2). The evalua-

tion of the connection between the level of services consumption and the population reproduction parameters is done with the help of analytical grouping method.

Table 2

DEMOGRAPHIC INDEXES FOR GROUPS OF DONETSK REGION CITIES IN 2003

Groups of cities according to the quantity of population, thousands people	Birth rate coefficient, %	Death rate coefficient %	Natural population growth coefficient, %
Up to 50	7.64	17.33	–9.69
50-100	7.14	18.32	–11.18
100-500	7.10	18.31	–11.21
500-1000	6.70	15.00	–8.30
More than 1000	6.60	14.70	–8.10
Total:	7.00	17.30	–10.3

The above given calculations witness the existence of reverse connection between the birth rate coefficient and the size of the city. The highest birth rate is peculiar to small cities, the lowest — to the largest. The connection between the death rate and the size of the city is not so obvious: it is estimated with the help of connection degree index. Thus, the index for the second group of cities made up 0.0376 % that shows that in the cities with population up to 100 thousand inhabitants every thousand of natural population growth id followed by 0.376 % growth of death rate coefficient.

At the same time, comparison of the third and the second groups of cities shows the reverse connection (b=-0.000044 per one thousand inhabitants). The figure is close to zero for the cities with population up to 500 thousand inhabitants, for larger cities degree of negative connection rises dramatically up to –0.007 % per one thousand inhabitants. The correlation of degree of connection indexes shows that death rate increases until the size of the population of the city exceeds 500 thousand inhabitants and then falls.

All the obtained results are called forth by a number of reasons of social-economical character, among which service industry plays an important role. The method of pair correlation regression analysis was used for quantitative evaluation of the service industry influence on reproduction regime parameters.

The average birth (Y_1), death (Y_2), natural population growth (Y_3) coefficients were used as resulting indexes. The amount of provided to population and paid for services per one inhabitant served as a fac-

tor. The calculations were made for homogeneous groups of cities. Dependence evaluation was held in terms of various connection types, including straight line, parabola, hyperbola, exponent equations; logarithm, reverse straight line functions. The choice of the most appropriate function was held in automatic regime according to formal approximation criteria: minimum approximation mistake, maximum F-criterion, absence of autocorrelation in the remainders as well as in the minimum deviation square sum (Table 3).

The analysis for the first group (consisting of small cities) shows that the services consumption level doesn't affect birth rate greatly; at the same time, death rate depends strongly upon services consumption level: 67.4 % death rate coefficient variation can be explained by variations of services consumption level. The results of natural population growth coefficient analysis were almost the same.

The results for the second group of cities were a bit different: services industry development influences greatly birth rate which 54.5 % growth is determined by the variation of the index under analysis; the tendency is almost the same though of a weaker character with the natural population growth coefficient (D = 0.515). Death rate showed a moderate connection.

Table 3

REGRESSION EQUATION DESCRIBING THE DEPENDENCE OF POPULATION REPRODUCTION INDEXES ON THE AMOUNT OF SERVICES PROVIDED TO THE POPULATION OF DONETSK REGION

Groups of cities	Regression equation	Relative approximation mistake	Durbin-Watson criterion	Determination coefficient	(Fisher's) F-criterion
Group 1	$\bar{y}_{1x} = 9{,}856 - 0{,}057x + 0{,}000x^2$	0.068	1.755	0.094	0.258
	$\bar{y}_{2x} = 27{,}771 - 0{,}324x + 0{,}02x^2$	0.048	2.173	0.674	5.158
	$\bar{y}_{3x} = -17{,}916 + 0{,}266x - 0{,}002x^2$	0.075	2.266	0.776	8.657
Group 2	$\bar{y}_{1x} = 3{,}767 + 0{,}060x - 0{,}000x^2$	0.043	2.470	0.545	4.791
	$\bar{y}_{2x} = 26{,}434 - 0{,}153x + 0{,}001x^2$	0.042	0.925	0.396	2.622
	$\bar{y}_{3x} = 22{,}667 - 0{,}213x + 0{,}001x^2$	0.089	1.276	0.514	4.235
Group 3	$\bar{y}_{1x} = 1{,}079 + 0{,}077x - 0{,}000x^2$	0.029	0.683	0.867	13.065
	$\bar{y}_{2x} = 33{,}723 - 3{,}149 \ln x$	0.040	1.254	0.574	6.744

	$\bar{y}_{3x} = 6{,}044 + 645{,}605 \cdot \frac{1}{x}$	0.076	0.760	0.732	13.637

In the third group of cities service industry as a factor influences very much the birth rate (D = 0.867); the connection with death rate coefficient is weaker (D = 0.574), still stronger than in the second group.

It should be pointed out that the most powerful connection of services industry with natural population growth coefficient is typical of the third group of cities (with high degree of services industry development).

The results that were obtained mainly correspond to parabola-like form that allows determining the extreme point, i.e. to calculate exact amount of provided services that change the connection direction in accordance with existing population reproduction regime parameters. Thus, for example, for the second group of cities according to death rate coefficient the extreme point accounts for UA Hr 76.5. This means, that the continuous services consumption decrease will speed death rate rise up.

Table 3 contains the results of the analysis alongside with calculated equation parameters that let us differentiate and define the role and place of services industry in reproduction regime parameters formation process in the context of different types of cities. Breaking points of services industry indexes that change the connection direction were obtained, that lets us elaborate population reproduction regime parameters management mechanism, differentiated according to the types of cities.

Thus, the use of analytical grouping method allowed us to distinguish the service industry development peculiarities depending upon the type of cities.

The first group consists of the cities that service enterprises are in a strong demand of outward monetary, finance, information, law and personnel support. As the level of services industry development is rather miserable, it cannot influence considerably reproduction regime parameters.

The second group consists of the cities which can develop services industry with the help of their own potential, inward resources and corresponding regional policy. Services industry development positive dynamics may foster the demographic indexes improvement in these cities.

Large cities are characterised by a considerably high services industry development level that influences greatly population reproduction regime indexes, aimed at provision of at least minimum reproduction.

That means that the problem of small cities cannot be solved inside a region on regional policy level. Services industry has a considerable influence on population reproduction regime parameters in large cities only.

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LEVEL AND FLUCTUATIONS IN HOUSEHOLD EXPENDITURES IN THE YEARS 1998—2002 AND INCOME GROUPS IN POLAND

1. Introduction

The objective of the paper is presentation of household expenditures and analysis of changes in their level and structure in the years from 1998 to 2002 in Poland. Income was chosen as the basic classification criterion, on the basis of which households were broken down into ten groups according to the consecutive deciles of income per person in the given household.

This paper is a continuation (obviously, in a much narrower scope) of the research, whose results were published in the book: *Analysis of income and expenditures of the population* [cf. Podolec (2000)]. One of the objectives set by the author was to identify the current directions in behaviour of social and economic groups of the population in the scope of income shape and expenditures. This shaping was analysed for the period (1990—1997) in which Poland faced dynamic changes in the social and economic system, which was reflected in the results of the analyses made.

This paper refers to the period, in which dynamics of transformations in social and economic structures was definitely weaker against the first years of the transformation; yet we can still observe trends in the household income and expenditures structure shaping, which originated in the first years of the transformation.

2. The basic notions and the source of statistical data

The basic entity in Poland, which acquires statistical data for researching household budgets is the Central Statistical Office (GUS). Results of its research and analyses are presented in numerous publications. Therefore, the following notions and definitions are quoted after GUS [cf. GUS (2003)]. It is also justified by the fact that this paper will make use of the data acquired within a representative research of household budgets by GUS.

The basic research unit is a household. One-person and multi-person households are differentiated. The one-person household is assumed to be a person supporting himself/herself independently, irre-